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approach

The Naval Aviation Safety Review

1988
CNO Safety Awards

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VAQ-209
VP-67
VR-57
HSL-74

CNATRA
VT-6***
VT-23**
VT-10
VT-21
VT-31

FMFLANT
HMM-261
VMA(AW)-533
VMFA-451
VMA(AW)-224

COMNAVAIRPAC
VF-24
VA-27*
VA-95**
VAQ-134 (AIRPAC deployed)
VFA-25
VS-33
VAW-114
VP-9
HS-6
HSL-31
HSL-45
VC-1
VAQ-34
HC-5
VAQ-130 (AIRLANT deployed)
VS-41

COMNAVAIRLANT
VF-84
VA-72
VA-55
HM-12**
VFA-87
VS-28
VAW-121
VP-10
HS-5
HSL-30
HSL-42*
VC-8
VX-1
HC-16

FMFPAC
HMM-268
HMLA-169
VMGR-152*
HMM-364
VMA(AW)-242

NAVAIRSYSCOM
NAVWEPCEN China Lake

CG Fourth MAW
VMA-131
HMM-764

Admiral James H. Flatley Memorial Awards

CV/CVN — USS *Carl Vinson* (CVN-70)
LPH/LHA — USS *Peleliu* (LHA-5)

*Second consecutive year
**Third consecutive year
***Sixth consecutive year

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Vol. 34 No. 11

VF-102 F-14 Tomcat hawking the deck of the USS *America* (CV-66). Photo by LCdr. Dave Parsons.

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Strike on T

"The size of the cloud and fire made it look like napalm. I didn't think they were supposed to drop live ordnance . . ."

Target-123

By Bud Baer

THE brief was about to start. His A-4M Skyhawk was to bomb Target-123 two minutes after an A-6 strike. Target-123 was a "railroad marshalling yard" consisting of a dozen jet-engine containers lined up to simulate tank cars.

They briefed the mission and talked about the target, weather, sun position, possible "unfriendlies" in the area and "threats" from Smokey SAMs.

The scenario included a 10-degree pop-up attack with the last of 12 Mk 76 practice bombs to go off the rack at 500 feet AGL. This plan took into account that the Skyhawk normally loses about 200 feet of altitude during recovery from the attack.

After the brief the pilot mentioned he was concerned about his A-4 canopy, which was dirty and badly pitted. He had watched his plane captain try to clean the windscreen and canopy, but he could not remove the deep scratches, gouges and a strange film that seemed to cover about 80 percent of the canopy.

He made a time-check on his digital wristwatch with other aircrews in the strike. He planned to set his aircraft clock from his wristwatch.

It would take him only 35 minutes to reach Target 123, low level all the way. En route, he thought about the challenge of flying these air strikes. He had worked hard on weapons delivery and tactics, particularly on pop-up attacks. He knew that to be effective in this maneuver you had to know the aircraft, what it could do, its closure rates and speeds, and what it felt like with the varied ordnance it carries.

> . . . "Dirt and dust flew high, followed by a massive fireball with billowing smoke moving across the ground. The aircraft made a long slash along the ground". . .

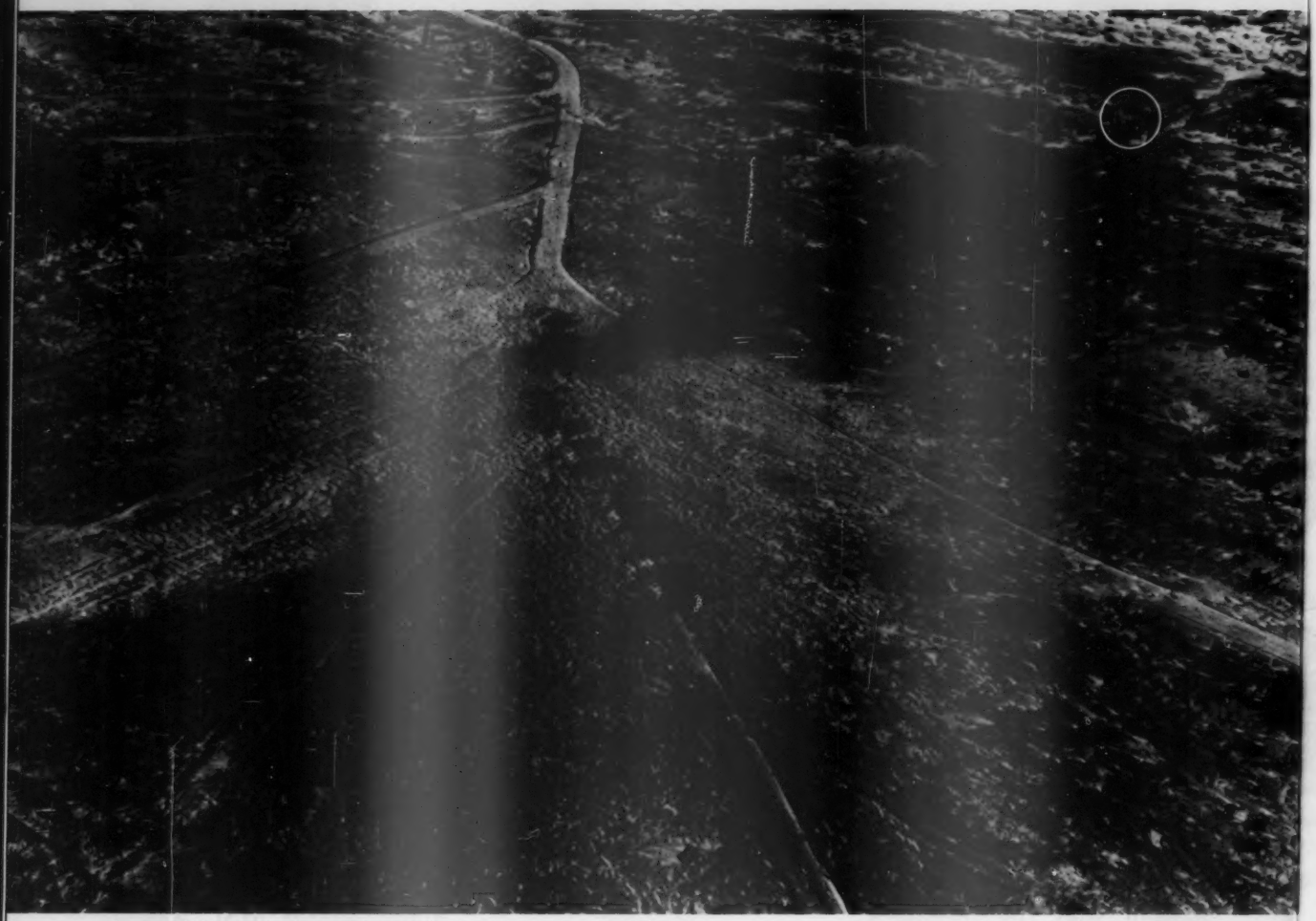
He was halfway to Target-123 and things looked good. The simulated marshalling yard was on a rise almost 1,000 feet MSL. His attack on the target depended on whether or not the A-6 ahead would hit it first. If the Intruder destroyed it, he would move on to a secondary target to drop his Mk 76s.

The Skyhawk pilot neared Target-123, turning on his initial point at about 450 knots. Suddenly he saw an A-6 making its run at the target. He was puzzled. He thought the Intruder was running late, so he decided to move away momentarily to observe its success on the target. He saw its bombs hit slightly off target. From then on, his memory drew a blank.

View From Above. An OA-4M loitering over the target at about 10,000 MSL was the evaluation aircraft. Its crew's responsibility was to monitor and record flights inbound to the target, times-on-target, hits and other pertinent data.

The pilot saw the Skyhawk roll wings level on his run heading about 045 degrees. His immediate thoughts were: "An A-4. Why's he here? He's early. He's too low. He'll never make it! Damn, he hit the ground. What do I say now? Knock it off, knock it off, knock it off!"

"All of this took about one-half a heartbeat," the OA-4M pilot said in his subsequent



Target-123, a simulated railroad marshalling yard consisting of aircraft engine cannisters to represent railroad tank cars. The Skyhawk cut a long swath along the ground. The circle shows where the pilot landed.

statement on the mishap. "It's impossible to tell you how fast all this went through my head. There was no chance to say, 'pull out.' I saw the airplane about 1,000 meters short of where it hit. As soon as I saw him, I knew he was going to hit the ground, but there was no way to call him. I called the 'knock it off' on strike frequency as soon as I was able to talk — about one-half second after impact. It hit just short of the train. Dirt and dust flew high, followed by a massive fireball with billowing smoke moving across the ground. The aircraft made a long slash along the ground."

The OA-4M crew contacted a CH-46 in the vicinity. They told the helo crew there was a crash on Target-123 and to go to the impact site to begin securing it. The O-4M pilot took it for granted that the Skyhawk pilot could not have survived the crash because "we saw no chute, heard no beeper and felt it was all over for the pilot."

View From the Helo. The CH-46, used for tactical support, had transported Smokey SAM and communications-jamming personnel to the target area. Still on the ground, the helo crew didn't see the A-4, but they were startled to see a large fireball and a black smoke cloud near the target.

"The size of the cloud and fire made it look like napalm," the helo pilot noted in his statement on the mishap. "I

. . . Still on the ground, the helo crew didn't see the A-4, but they were startled to see a large fireball and a black smoke cloud near the target . . .

didn't think they were supposed to drop live ordnance. It was then that we started to talk about the possibility of a crash. We ran down the hill to the CH-46, turned up the auxiliary power and listened to the radios. We soon got the word.

"We took off instantly for the crash site, passed over it and sought a place to land. We were following the flight path of the mishap aircraft.

"Suddenly, we saw a man near a tall burning bush. He was standing and waving at us. A survivor? How could this be possible? Yet, there he was — the A-4 pilot — standing, waving and running as we approached."

The helo banked, came around and landed. The crew chief got out to help the survivor, but he didn't need much help. He ran to the helicopter, smiled and gave a "thumbs up" that he was OK. He climbed in, sat down just aft of the port door and strapped in. He had dried blood on his face and his helmet was on.

"I instructed my crew chief to have him lie down on the three-man seat, check for bleeding and watch for signs he might go into shock," the helo pilot said. "Still giving us the 'thumbs up' sign, he appeared to be in fair shape. We got him to the hospital as soon as possible."

The Skyhawk's engine; below, the broken tail section.

How He Survived. How did he miraculously live through this mishap? Because the flight angle into the ground was very shallow, the G force on impact was minimized. This permitted him to survive as the aircraft was breaking up.

Although he didn't initiate ejection sequence, the canopy departed the aircraft, and he and his ejection seat were cata-

Investigators look closely at the position of the ejection seat. It is attached to the parachute, which is draped over some bushes. Below, another view of the ejection seat and the parachute. The pilot in the seat was thrown from the A-4 on impact with the chute deploying and easing the pilot to a safe landing. Right, the landing position of the ejection seat. The pilot was able to unstrap himself and walk away.

pulted into the air from the burning Skyhawk. Somehow the automatic sequence initiator in the parachute pack was activated, perhaps by the pilot's violent body movement or by flying debris. His drogue chute and parachute deployed into the windstream while he was still attached to the seat.

The chute's "snatch force" slowed him down before he touched the ground. From all indications he was eased down from his short seatborne ride almost perpendicular to the ground on the chute's downswing. The way the shroudlines were draped over nearby bushes and the lack of seat skid marks seemed to strengthen this contention.

Why did he black out and lose his memory of this critical period? The doctors called it "retrograde post traumatic (organic) amnesia secondary to head trauma." The next day his memory was back to normal, except for the blackout period. His injuries included a concussion, scalp cut, sprained ankle, scattered burns and back injuries. He spent the next five

days in the hospital, mostly for observation. Within three months he was back on flying status.

Why It Happened. A number of reasons were given for the possible cause of this mishap. One theory advanced by the mishap pilot was that the simulated railroad tank cars were aircraft engine containers only about one-fifth the size of actual tank cars. Each engine container measured 12 feet long compared to the standard railroad tank car of 60 feet. A pilot relying only on visual cues to bomb a target might be lured into a release at a low, unsafe altitude. On the other hand, release parameters should be based on dive angle, airspeed and altitude rather then visual determination of target size, safety analysts noted.

The eight-day clock in the A-4 and other types was a source of consternation to the Skyhawk pilot. It may have contributed to the timing error. The pilot might have set it incorrectly. At the briefing the pilot checked the time on his digital wristwatch with the other aircrews and found it accurate. By his aircraft clock, he said he began the low-level mission on time and hit every point on time at a speed of 420 knots. Mishap witnesses in the area said his aircraft clock may have been fast by about two minutes. Since then, the pilot has flown by his watch rather than the clock. He feels that digital clocks should be used on A-4s and all aircraft since they are much easier to read.

The primary cause of this mishap was "the deviation from the intended flight path resulting in disorientation, which was amplified by poor visibility because of the sun angle, haze and a glazed canopy."

A discrepancy report on the A-4's canopy was submitted by the mishap pilot 12 days before the mishap. He said the poor condition of the canopy made the A-4 "unsuitable for air combat sorties." The aircraft had flown 13 missions since the report was filed, and the Skyhawk had been inspected and certified safe for flight in accordance with existing directives.

Visibility was also impaired by the sun. When the A-6 had completed its bomb run, the A-4, which was early, had to modify its attack approach. The pilot chose a route into the sun, which caused poor visibility with the low sun angle, haze and shadows off the hills.

Soon after the mishap, an RF-4 tried to duplicate the run by flying the same profile as the mishap aircraft. It made four runs into the sun. The pilot said "the sun angle, haze and rapidly rising terrain" made it almost impossible to see the target. This severely limited visibility from the sun and haze, coupled with the canopy condition, turned out to be major cause factors of this unusual mishap. ◄

Bud Baer is a staff writer for Approach magazine

Up Close and Personal

By Lt. Ken Ireland

"Turning to local news, the Navy has called off the search for two missing Seahawk helicopters and 10 missing airmen who disappeared while conducting what was described as a 'routine training mission' this past Sunday night. The helicopters disappeared after completing landing practice on a frigate 50 miles east of NAS Southeast. Navy officials acknowledged that there were severe thunderstorms in the area but declined comment on the actual cause of the mishap until the investigation is complete."

This newscast never happened, but it could have if the aircraft in the following story had actually collided.

THE mission that humid Sunday evening was RAST (recovery assist securing and traversing) Landing Qualifications (RLQs) aboard a frigate in the local operating area. The two HACs (helicopter aircraft commanders) briefed their crews and the nuggets aboard for their quals. Also aboard was the LSO (landing signal officer) who would direct landings on the ship. The HACs conferred on the event. Among the items they discussed was altitude separation. Because of a recent near miss in the RLQ pattern, it was agreed that when both aircraft were airborne there would be a minimum of 500 feet vertical separation.

En route to the boat, the two aircraft maintained communications and altitude separation. Once a green deck was called, the aircraft settled into the RLQ pattern with the usual

delays for course changes, RAST equipment problems and crew changes. As night approached, it became apparent that the actual weather was completely different from the forecast weather.

Both HACs and the LSO recognized a rapid buildup in the intensity of the thunderstorms in the area. They decided to cancel the training and return to base. By the time the remaining nuggets and the LSO had been picked up at the boat, a line of severe thunderstorms blocked the return route to homeplate.

As the aircraft left the ship, the HAC in Seahawk 1 selected radar on his multipurpose display to determine the size of the storm. He directed the pilot at the controls (PAC) to fly a course of 180 to avoid the storms. The PAC, a nugget, climbed to 650 feet and flew 180 at 80 knots. Seahawk 2 departed the ship's control zone following Seahawk 1. The HAC in Seahawk 2 was preoccupied with a malfunctioning radar and directed the PAC to maintain a visual on Seahawk 1.

The PAC in Seahawk 2 was an experienced aviator who jumped into the front seat when Seahawk 2 landed to take on the remaining students. He had not fully night-adapted and was working on developing an instrument scan while keeping an eye on the first helo. His scan was degraded by the lightning in the area, the most frequent and intense lightning he had ever seen.

As he flew south to maintain visual contact with Seahawk 1, he accelerated to 120 knots, a typical cruise speed for the SH-60. Although they were below the ceiling and the visibility was four to five miles, the PAC of Seahawk 2 struggled to maintain his scan and a visual on the other aircraft.

In Seahawk 1, the HAC, who had been occupied with the radar and radios, asked the sensor operator (SO) if he had a visual on Seahawk 2. The SO reported Seahawk 2 at 7 o'clock passing to the 6 o'clock position.

In Seahawk 2, the HAC continued trouble-shooting his failed radar. The PAC settled in for the flight home, primarily scanning his flight instruments. As he looked out, he noticed the taillight and the upper strobe of Seahawk 1 in the distance. He momentarily looked back inside the aircraft as another bolt of lightning illuminated the cockpit. As the PAC of Seahawk 2 looked outside again, his windscreen was filled with the outline of the other helicopter eerily illuminated by the red light of the strobe. He applied full left cyclic, banking the aircraft to 60 degrees and starting a climb.

Seahawk 1's SO regained Seahawk 2 visually as the aircraft banked just outside the SO's window. The estimated miss distance was less than two rotor arcs. The grim reaper had paid a visit and came within 75 feet of a bountiful harvest.

What really happened? The physiologists tell us that even in mild lightning it can take five to seven seconds to regain night vision. In this near-miss, blinding lightning occurred at intervals of four to six seconds. The pilots in both helicopters were continuously blinded during the flight.

One of the basic precepts of formation flying (or in this case, loose trail) is the requirement to maintain visual contact with the lead aircraft. With no visible horizon and intense lightning in the area, the pilot of Seahawk 2 was overworked trying to maintain an instrument scan and visual contact on Seahawk 1.

Altitude separation had been briefed and followed up to this point in the flight. Both HACs were working to clear equipment malfunctions and get more information on the storm. No base altitude or airspeed information was passed between aircraft after they departed the ship. The PAC of Seahawk 2 assumed Seahawk 1 was flying at about 120 knots, so he did not anticipate a high closure rate.

Most importantly, the HACs did not assist the pilots who were actually flying the aircraft. Scan or lookout information would have been helpful. An early detection of slow airspeed by the HAC in Seahawk 1 would have reduced or eliminated the rapid closure rate. Had the HAC in Seahawk 2 visually assisted his PAC, the rapid closure rate might have been detected and corrected much earlier.

Lt. P.J. Azzolina

Postflight and wardroom discussions raised several rules to live by. The requirement for altitude separation was emphatically restated; use of the IFF interrogator or air-to-air TACAN was suggested as a method to maintain horizontal separation. Use of the antisubmarine air controller (ASAC) on board the ship was also suggested for maintaining positive control and aircraft separation.

The moral of the story: If you are flying form, a visual perspective of the lead aircraft is required. Visual on the position lights and anticollision lights does not allow sufficient visual cues to judge distance and closure rate. That is why our fixed-wing friends have formation lights. If you can't maintain visual contact with the aircraft, whether the problem is lightning, clouds or rain, break it off and ensure that you have altitude separation. If you have additional navigation aids and tactical sensors, use them. ◄

Lt. Ireland, a graduate of the Aviation Safety School, flies SH-2Fs and is QA officer with HSL-94, NAS Willow Grove, Pa. Previously he flew the SH-60B with HSL-40 at NAS Mayport, Fla.

Not Your Average Day. . .
Not Your Average Flight

By Lt. David B. Piccone

CROSS-COUNTRY flying is some of the most enjoyable and challenging flying available to the naval aviator. My squadron supports cross-country flights because of the confidence a pilot develops while gaining proficiency in instrument flying. A pilot gets a better understanding of the aircraft and has the chance to make decisions that may not arise in the course of local training flights. The pilot also gets involved in all facets of flight planning and must deal with unusual contingencies that may arise.

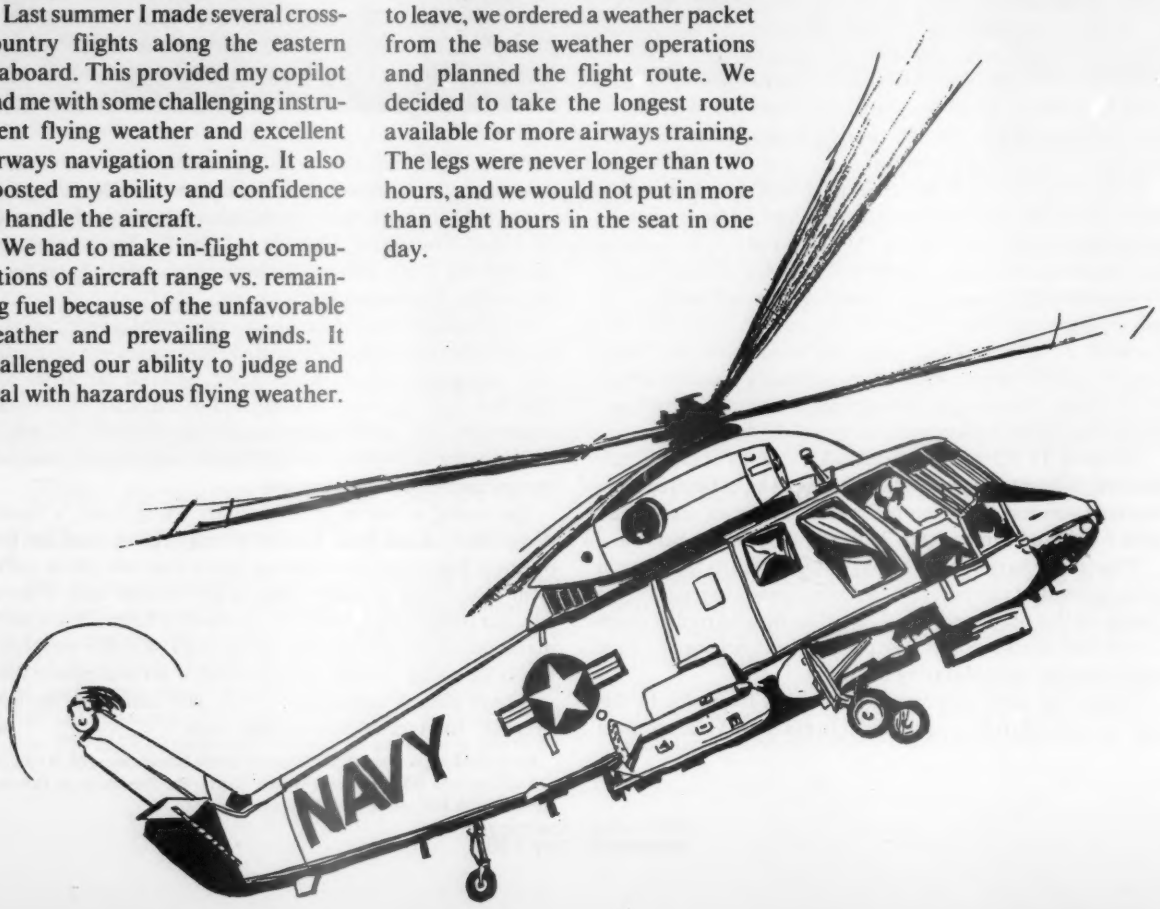
Last summer I made several cross-country flights along the eastern seaboard. This provided my copilot and me with some challenging instrument flying weather and excellent airways navigation training. It also boosted my ability and confidence to handle the aircraft.

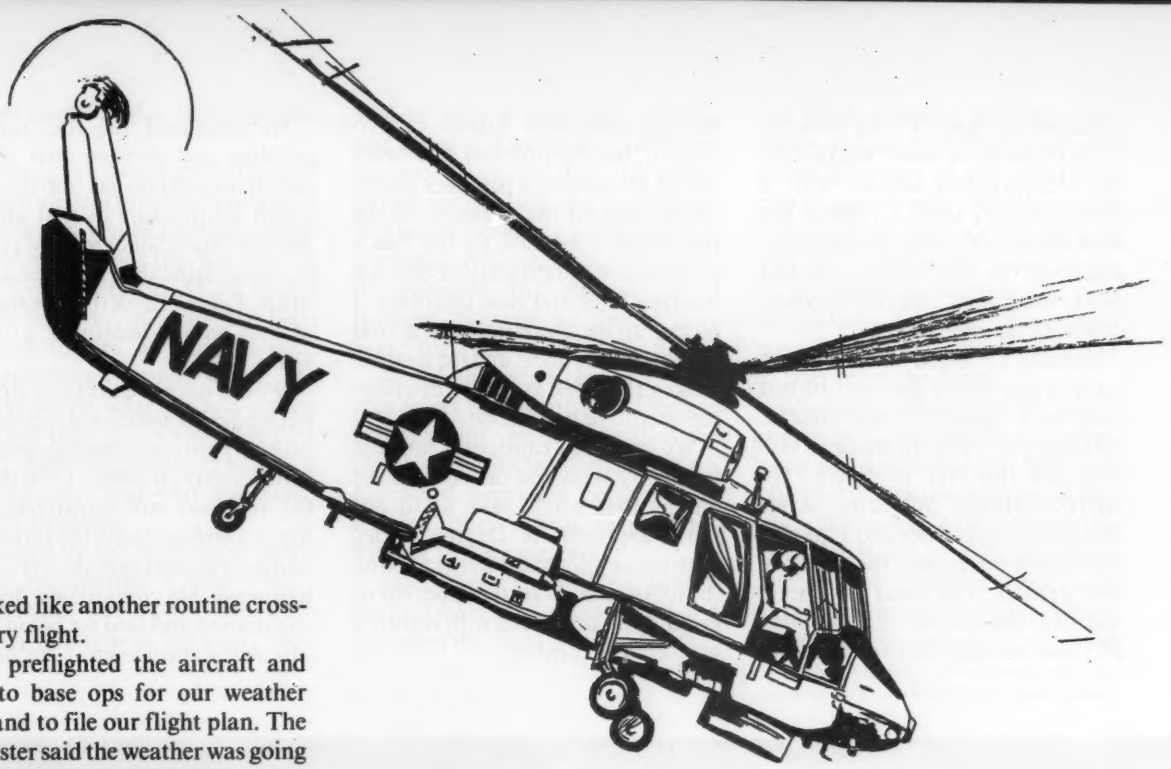
We had to make in-flight computations of aircraft range vs. remaining fuel because of the unfavorable weather and prevailing winds. It challenged our ability to judge and deal with hazardous flying weather.

My copilot and I had planned to fly to NAS Northeast for some flight time and some extra training opportunities. We filled out a cross-country request early in the week so that we could get it approved by the skipper. The prevailing weather over the middle Atlantic states that week was typical for July — hot, hazy and humid along with the usual amount of convectivity and forecasted thunderstorms. We received permission to fly that weekend to NAS Northeast.

A day before we were scheduled to leave, we ordered a weather packet from the base weather operations and planned the flight route. We decided to take the longest route available for more airways training. The legs were never longer than two hours, and we would not put in more than eight hours in the seat in one day.

We also paid particular attention to divert military airfields and civilian fields where service and contract fuel could be obtained. Nothing is more depressing than to have your helo break down between destination with no available service or repair facility in sight. Our route would take us northeast into some of the Appalachian mountains, but this would really be no problem since most of the MEAs (minimum en route altitudes) were 5,000 feet. Except for the usual poor visibility,





it looked like another routine cross-country flight.

We preflighted the aircraft and went to base ops for our weather brief and to file our flight plan. The forecaster said the weather was going to be good, but he added that some occasional turbulence, rain showers and imbedded thunderstorms might be encountered. We filed and briefed our flight. We decided that each of us would take turns as navigator and perform the associated in-flight checks for time, distance, groundspeed and fuel consumption along the route. The flight was planned for three legs up and two-to-three legs back, depending on winds aloft.

The first leg of the trip was smooth. The second leg went as smoothly as the first except for the skies ahead of us. Instead of being sunny and bright, the horizon was now graying, and the thought of thunderstorms began to bounce around in my head. Fortunately, we arrived at Upstate AFB without problems.

As we shut down to refuel, the sky started to turn black, and the wind changed direction. I told my copilot to gas the aircraft, while I went to weather to check the local and en route conditions. Satisfied with what I had seen on the radar picture, I told my copilot that we would have to gas and go because a huge cell was moving toward the airfield in the direction of the airway that we would fly to our destination. If we left quickly enough, the thunderstorm wouldn't bother us. Our immediate gas-and-go was delayed by two Air Force T-38s whose pilots had the same idea.

> . . .As we lifted off the runway, we were hit with a sudden increase in the rate of climb, followed by an immediate increase in the rate of descent. . .

We finally finished fueling with the wind now blowing a steady 25 knots with the threat of rain imminent. As we taxied for takeoff, we talked about the possibility of windshear. As we lifted off the runway, we were hit with a sudden increase in the rate of climb, followed by an immediate increase in the rate of descent. Lucky for us, we had gained enough altitude before the shear hit. If we had been closer to the ground, I don't think that a full-up collective would have prevented us from hitting the deck. Once we had established a positive rate of climb and my legs stopped shaking, I said to myself, "Convective windshear can be a killer, even if you are expecting it."

We proceeded along the airway, making fuel and groundspeed calculations. We had a strong tailwind so we would be at our destination in good time. Once again, however, the skies turned dull gray and the thought of cumulo nimbus clouds danced in my head. As we passed a well-known checkpoint and were cleared to climb and maintain 9,000 feet, I started to relax.

While we flew in and out of the clouds, I performed a fuel check and noticed that the aircraft had stopped

transferring fuel. I told myself, "What's going on now? We haven't had this problem before. Wait a minute, wasn't there a gripe in the book about this? Yeah, maintenance said that the fuel system checked good on the deck, and they couldn't duplicate the problem."

Quickly I decided that I did not want to run out of gas, so I turned back to a major civilian airfield. ATC gave us a priority descent, vectors and turnover to tower. We landed without difficulty. After shutdown, my copilot and I quickly discovered the reason for a lack of fuel transfer. The bleed air system had over-pressurized the fuel lines and had blocked fuel transfer. We had no idea what caused this to happen, but the problem was easily solved by opening a precheck panel, which relieved the pressure on the fuel lines. I hurried to the FBO, ordered gas and called the FSS for a weather brief and new clearance. I picked up the clearance with a void time, over the phone, and the weather looked the same as earlier briefings reported. We pressed on.

We launched cautiously into the hazy gray skies and intercepted the airway that would take us to our initial approach fix. During this leg both my copilot and I were hawking the fuel gauge. Transfer appeared to be going as advertised with no other problems to consider.

We discussed the fuel transfer problem and decided that maybe our climb to 9,000 feet and the associated air pressure at that altitude was the cause. Since we had cleared the mountains that required a high MEA, I didn't think that the transfer of fuel would become a problem again.

We did not have the same trouble, but we did get associated fuel transfer caution lights and bleed air pressurization lights en route. Even though the fuel was still transferring, the lights, combined with the turbulence and intermittent rain showers, made us uneasy. My copilot did a distance calculation and said we could make our destination even if we had no

My First SAR

By AW3 Larry "Bud" Grossman

"THE *Bonefish* is on fire! The Bonefish is on fire!"

Those words were screamed through the ready room like a police siren. The duty officer began rounding up the alert crew and coordinating the rescue. Within a few chaotic minutes, the alert crew was together, and we ran to the alert bird. We had to wait to launch since a recovery was in progress. The minutes we spent waiting for the last fixed-wing aircraft to land seemed endless. Finally, we were towed to spot three and took off in the direction of the smoke-filled submarine.

My thoughts flashed to SAR school while we were en route to the sub. I recalled running, swimming and getting mind and body in shape for my final simulated rescue. The day I graduated was one of the proudest days of my life. Until now, it had been just talking and dreaming about an actual rescue. Now it wasn't just talk; it was about to happen and very real.

As we approached the surfaced submarine, we saw another SH-3H from our ship hoisting survivors from the hatches. Our job was to look for survivors in the water. I saw several life rafts (MK-6s) floating toward the horizon. They were all empty.

Then I spotted a raft with survivors. As I went down the rescue hoist, my adrenaline was flowing. I cautiously approached the raft and asked if everyone was OK and took a head-count that totalled 26 persons. Some had trouble breathing, and others seemed to be in a state of shock.

As I swam toward the helo hoist with my first survivor, he had difficulty moving in the water; and in a panic, he knocked off my mask. After I gave him my flotation device (SAR-1), he calmed down. I put him in the rescue strap, and he was hoisted up and into our helo — my first rescue.

When I turned to go back to the raft, I saw that it had drifted about 40 yards away. Rather than swim that distance, I signaled for an "air taxi." Our hoist operator understood and advised the pilot who flew me to the life raft while I was on the hoist.

After another seven rescues, the helo left the scene to deliver survivors to the ship. The sea-state was picking up, and night was approaching. I then realized that I had been in the water for a

further fuel transfer from the aux tanks.

Center gave us vectors to the destination airfield for a GCA pickup. I thought that center had been reading my mind, since this was exactly what I wanted to do. Much to our regret, however, we had just been vectored toward an unannounced and unforeseen thunderstorm. We did not know what we had gotten ourselves into until we saw the first bolt of lightning, accompanied by a tremendously loud roar and some severe turbulence.

I turned up the instrument panel lights, anticipating a wild ride. I called center and asked if they were painting any cells in our area. They replied with a confident negative and asked us if we desired a different vector. Knowing that the storm would not last long, my copilot replied that we might as well go straight through it. As we got battered around by updrafts and downdrafts, I thought, "Maybe we should have asked for a vector out of this mess."

It took the better part of 15 minutes to get through the cell. Shaken and sweating, we broke out of the clouds and were handed off to NAS Northeast approach control. The terminal phase of the flight ended without further incident.

After shutdown and check-in with the host squadron, we sat down and debriefed the flight. We decided that our flight planning had been adequate and that we had kept ourselves informed of the weather at every opportunity. We also made numerous in-flight calculations so that we would not get backed into a corner while en route to the next destination. This was cheap insurance and proved to be important to us later on in the flight.

What we planned for but didn't expect was the windshear, turbulence and thunderstorms. We never expected them to be as severe as they were. The lesson we learned on this flight was basic — no matter how comfortable or familiar you are with certain procedure or routine, always expect the unexpected. ◄

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I learned a lot from my first rescue:

- Don't anticipate that everyone in the Navy can swim properly. Some people just squeak by in boot camp. A key aspect of a rescue is helping the survivor to become calm and more comfortable in the water. This makes the rescue swimmer's job easier.
- Attach your mask to your swimmer's harness with a shroudline to avoid losing it. Be prepared to give up your SAR-1 if the swimmer requires flotation.
- Realize the effect of adrenaline during a rescue. Know that you have limitations, and listen to what your body is telling you. You may not be as lucky as I was to wind up the SAR in a recovery room.
- Maintain communication with your helicopter crew. If more rescue assets are available, make use of them as you feel necessary. Talk with your crew and use their input. Don't be afraid to try new techniques. If the survivors have drifted away, use your helicopter to ferry you closer.

(This is a rescue swimmer's account of the fire on USS *Bonefish* (SS-582) on April 24, 1988. Three crewman died, but 89 escaped the stricken submarine and were rescued by helos and whaleboats. The December 1988 issue of Approach magazine published two articles on the airborne portion of the rescue: "The Rescue of the *Bonefish* — An Easy Day" by Cdr. J.J. Waickwicz, and "Sub in Trouble" by AW1 James E. Chapman.) ◄

AW3 Grossman is a SAR crewman with HS-7, assigned to the USS *John F. Kennedy* (CV-67).

transferring fuel. I told myself, "What's going on now? We haven't had this problem before. Wait a minute, wasn't there a gripe in the book about this? Yeah, maintenance said that the fuel system checked good on the deck, and they couldn't duplicate the problem."

Quickly I decided that I did not want to run out of gas, so I turned back to a major civilian airfield. ATC gave us a priority descent, vectors and turnover to tower. We landed without difficulty. After shutdown, my copilot and I quickly discovered the reason for a lack of fuel transfer. The bleed air system had over-pressurized the fuel lines and had blocked fuel transfer. We had no idea what caused this to happen, but the problem was easily solved by opening a precheck panel, which relieved the pressure on the fuel lines. I hurried to the FBO, ordered gas and called the FSS for a weather brief and new clearance. I picked up the clearance with a void time, over the phone, and the weather looked the same as earlier briefings reported. We pressed on.

We launched cautiously into the hazy gray skies and intercepted the airway that would take us to our initial approach fix. During this leg both my copilot and I were hawking the fuel gauge. Transfer appeared to be going as advertised with no other problems to consider.

We discussed the fuel transfer problem and decided that maybe our climb to 9,000 feet and the associated air pressure at that altitude was the cause. Since we had cleared the mountains that required a high MEA, I didn't think that the transfer of fuel would become a problem again.

We did not have the same trouble, but we did get associated fuel transfer caution lights and bleed air pressurization lights en route. Even though the fuel was still transferring, the lights, combined with the turbulence and intermittent rain showers, made us uneasy. My copilot did a distance calculation and said we could make our destination even if we had no

My First SAR

By AW3 Larry "Bud" Grossman

"THE *Bonefish* is on fire! The Bonefish is on fire!"

Those words were screamed through the ready room like a police siren. The duty officer began rounding up the alert crew and coordinating the rescue. Within a few chaotic minutes, the alert crew was together, and we ran to the alert bird. We had to wait to launch since a recovery was in progress. The minutes we spent waiting for the last fixed-wing aircraft to land seemed endless. Finally, we were towed to spot three and took off in the direction of the smoke-filled submarine.

My thoughts flashed to SAR school while we were en route to the sub. I recalled running, swimming and getting mind and body in shape for my final simulated rescue. The day I graduated was one of the proudest days of my life. Until now, it had been just talking and dreaming about an actual rescue. Now it wasn't just talk; it was about to happen and very real.

As we approached the surfaced submarine, we saw another SH-3H from our ship hoisting survivors from the hatches. Our job was to look for survivors in the water. I saw several life rafts (MK-6s) floating toward the horizon. They were all empty.

Then I spotted a raft with survivors. As I went down the rescue hoist, my adrenaline was flowing. I cautiously approached the raft and asked if everyone was OK and took a head-count that totalled 26 persons. Some had trouble breathing, and others seemed to be in a state of shock.

As I swam toward the helo hoist with my first survivor, he had difficulty moving in the water; and in a panic, he knocked off my mask. After I gave him my flotation device (SAR-1), he calmed down. I put him in the rescue strap, and he was hoisted up and into our helo — my first rescue.

When I turned to go back to the raft, I saw that it had drifted about 40 yards away. Rather than swim that distance, I signaled for an "air taxi." Our hoist operator understood and advised the pilot who flew me to the life raft while I was on the hoist.

After another seven rescues, the helo left the scene to deliver survivors to the ship. The sea-state was picking up, and night was approaching. I then realized that I had been in the water for a

further fuel transfer from the aux tanks.

Center gave us vectors to the destination airfield for a GCA pickup. I thought that center had been reading my mind, since this was exactly what I wanted to do. Much to our regret, however, we had just been vectored toward an unannounced and unforeseen thunderstorm. We did not know what we had gotten ourselves into until we saw the first bolt of lightning, accompanied by a tremendously loud roar and some severe turbulence.

I turned up the instrument panel lights, anticipating a wild ride. I called center and asked if they were painting any cells in our area. They replied with a confident negative and asked us if we desired a different vector. Knowing that the storm would not last long, my copilot replied that we might as well go straight through it. As we got battered around by updrafts and downdrafts, I thought, "Maybe we should have asked for a vector out of this mess."

It took the better part of 15 minutes to get through the cell. Shaken and sweating, we broke out of the clouds and were handed off to NAS Northeast approach control. The terminal phase of the flight ended without further incident.

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AW3 Grossman is a SAR crewman with HS-7, assigned to the USS *John F. Kennedy* (CV-67).

I've Never Heard of this One Before

By Lt. Tyler Davenport

I was a nugget on my first Alert 5 launch, out to defend against the Orange air assets. The ship was operating in the Caribbean on the last set of work-ups prior to cruise. I couldn't have felt better; it was a beautiful day with nothing in my near future but some F/A-18 hunting and an afternoon recovery.

Accelerating outbound, we were joined by a squadron mate, and both RIOs got contacts. Finishing a supersonic intercept, we claimed our kills and slowed to max conserve. We figured that we'd better save some gas for recovery.

Slowing down below 0.7 IMN, I noticed a funny thing. My Tomcat's wings, which had been programmed to the full aft position during our 1.1 IMN run, were still right there.

"This isn't good," I thought, as I tried to remedy the situation with the wingsweep button, emergency handle, circuit breakers and prayer.

I reviewed the pocket checklist but found no solution. My wingman didn't have any ideas either. Since 68-degree wingsweep landings are prohibited shipboard, we began a 200-nm divert to NAS Roosevelt Roads, P.R. I had no fingertip figures for a 68-degree bingo, but a glance at the pocket checklist indicated we had plenty of gas. The ship was EMCON, and there was max jamming on the E-2 fighter control frequency. We finally contacted an Air Force E-3A that did an outstanding job of passing information to the ship and coordinating with both center and approach at our divert field.

We now had time to go over our options. We decided to dump gas to lighten the aircraft and slow our speed, then fly a low, shallow approach to a short-field arrestment. If we missed the gear, we would use afterburner on the go-around and continue to do so until fuel forced us to stay on the deck. Runway length was 11,000 feet. If we did keep it on deck and went off the runway, I would call for ejection only if we were going to run into any obstacles.

We began our descent and leveled off at 10,000 feet for a controllability check. As on-speed was 200 knots, we began to dump fuel. We lined up for a long downwind and got a good look at the field. Turning inbound at eight miles, I flew a visual straight-in with my RIO monitoring airspeed and altitude. When we had the field made, I brought the power to idle and began a slow flare, hoping to decrease airspeed as much as possible.

... Slowing down below 0.7 IMN, I noticed a funny thing. My Tomcat's wings, which had programmed to the full aft position during our 1.1 IMN run, were still right there...

We landed on the numbers, but the hook skipped the wire. As I went to full afterburner, I got a master caution light, but was too busy to determine its cause. After rotating at the five board and getting airborne again by the four board, I looked down at the caution advisory panel and saw that the combined hydraulics had gone to zero.

Ground observers reported that we appeared to have blown a mainmount. The good deals just kept getting better as we discussed the problems associated with keeping the jet on the runway if we had to stay on the deck.

We again flew the same type of approach, but this time we caught the wire with an engaging speed of 185 knots. As we climbed out of the jet, we saw that we had not blown a mainmount, but hydraulic fluid was pouring out of the port side of the aircraft.

Orange Air was based out of this field, and we were taken "prisoner" to be "interrogated" later at the Club. It turned out that the port wingsweep actuator had frozen, and combined fluid was being ported overboard.

Discussing the day's events later, my RIO and I realized that we were lucky. A lot of things had actually gone right for us that day. If the problem had occurred in the break back at the boat, we would have been faced with a 300-nm divert, which would have required tanking, since we would have been down to max trap fuel. It could have been night or IFR, or both, which would have made things a lot more difficult.

The worst case, however, would have been blue water ops, with no diverts available. We might have ended up holding overhead until we ran low on fuel and had to eject. We were very lucky! It really hit home that just because NATOPS doesn't cover it, doesn't mean it can't happen. ◄

Lt. Davenport is an F-14 pilot with VF-32 at NAS Oceana, Va.

A Nightstick to the Back of the Head

Anti-blackout suits shall be worn and connected on all flights in aircraft equipped for their use.

OPNAVINST 3710.7M

By LCdr. J. Nortz

AS a bombardier/navigator in the veteran A-6E Intruder, I want to tell you that the danger of GLOC is not limited to fighter crews. Everyone who wears a G-suit should be aware of the danger of G-induced blackouts — and that includes NFOs who are often caught unaware.

A few years ago as a salty lieutenant, I was paired up with the New Guy for a simple FCLP hop in preparation for an upcoming CQ det. My FCLP brief was more in-depth than usual because I'd never flown with this pilot before. I was also the NATOPS Officer, and I was determined to set an example for our recently acquired pilot. I tried to be upbeat about the flight, but in reality I was tired, bored, complacent, a bit hypoglycemic — 1800 launch, no dinner — and in general, disgruntled about flying another bounce hop. I know very few

B/Ns who get excited about FCLP.

As I strapped in, I failed to connect my G-suit on purpose. I hate to admit this, but not connecting my G-suit was not due to forgetfulness. Somewhere in my brief career of riding shotgun in A-6s, I wrongly decided that there was no need to hook up for a measly 0.6-hour FCLP period. Yes, I *wore* my G-suit; *that's* regulation. It sounds silly now, but back then the contradiction in logic of wearing the suit and not hooking it up never entered my mind.

The four-minute flight to the OLF was routine. My call to the LSO that we were at the initial was routine. His response, "Roger, your interval is approaching the 180, upwind numbers, break approved," was routine. Somewhere in this routine I missed a few things. I missed the increase in power descending from initial altitude to break altitude and the corresponding increase in airspeed to well above the briefed 300-knot break. In addition, I *assumed* New Guy caught the LSO's "upwind numbers" call and would respond accordingly.

I also *assumed* the pilot had picked up (in either his RAG syllabus, or in his previous plowback instructor tour) that in multi-seat aircraft, it's common courtesy to give your crew a heads-up call prior to the break. My assumptions were all wrong.

New Guy made his midfield break with all the snap and gusto you'd expect from an experienced pilot trying to impress his first fleet squadronmates. The maneuver caught me off guard and completely unprepared. The rapid onset of Gs hit me as hard as a well-placed nightstick to the back of the head. I was out cold — totally unconscious — in less than a heartbeat. But the best was yet to come.

I was out for about 10 seconds before I began to rouse from my untimely nap. Your brain can do some strange things as it tries to re-orient itself after such an episode. My first conscious sensation was that I was in an airplane. Good start! That was probably from my dim memory and tactile sensations of helmet, mask and vibrations combined with sound. Next from the apparent motion, I surmised that the airplane was flying. And finally, my vision began to return. But, as the gray receded and I tried to focus, my eyes were in a rapid, uncontrolled scan from side to side. I was overcome by complete vertigo with an overpowering sensation that I was tumbling end over end. My awakening brain took these three inputs and made a decision: I was in an airplane, the airplane was flying, and the plane was out of control. Eject!

This entire process, from initial sensation to ultimate decision, took less than a second. The fact that I didn't act was due purely to human physiology. The brain centers that receive the initial outside stimuli and formulate decisions lie lower on the brain and closer to the blood supply than the outer cortex areas that regulate motor control and coordination. The only reason I didn't eject from a perfectly good airplane was because that area of my brain didn't have the juice to make my hands do what the decision-making part of my brain wanted them to do. Luckily, before I regained control of my hands, New Guy recognized that I was in trouble and began talking to me. This delayed my decision to eject until enough of my brain came back on line and I could recognize my true sensation. The fact that I was within seconds of ejecting in the FCLP bounce pattern for no good reason is truly terrifying.

It is obvious that I made several mistakes on that flight. If I had simply hooked up my G-suit, my body would have stayed ahead of the G-forces and I would not have blacked out. You can't assume you won't be confronted with uncontrolled and unpredictable G-forces from malfunctioning flight controls, catastrophic flight surface failure or other unexpected situations. In such an emergency, a connected G-suit will provide more useful conscious time. I also learned I couldn't count on an important little item like a courtesy "break" call. My mistake was to omit it from the brief. ◄

LCdr. Nortz is the maintenance officer for VA-95. He has over 2,300 flight hours and 570 traps in the A-6.

This is an excellent example of areas that the Aircrew Coordination Training (ACT) Program addresses. Even with a brief that "was more in-depth than usual," this story highlighted the fact that perhaps we ***assume*** *we follow the brief, the course rules and the LSO-break instructions.*

We rationalize that the rules say we have to wear the g-suit, but the rules don't say we have to connect it. ACT highlights some of the mind traps we fall into, such as complacency, boredom, fatigue and machoism. Just as we continually review NATOPS, ACT can help us review crew coordination.

Thanks to LCdr. Nortz for an outstanding article. — Ed.

Real Men Don't Do Hover Checks

By Capt. R.E. "Buck" Joslin, USMC

. . . If the air boss or FAC is screaming for you to get off his deck landing zone, just think how much more upset he will get if you splatter your airframe across the area . . .

NUMEROUS mishaps show that we often operate our helicopters at unknown gross weight; unfortunately, they're usually too heavy. We get into situations where the HOGE (helicopter out of ground effect) power required exceeds the power available, resulting in our helo launching in extremis.

Contributing to this problem are inaccurate computations, gauge errors, unforecast bad weather, unexpected passengers and unknown cargo loads. The moment of truth comes when we break skids or wheels and pull into a hover. At that point we can overcome all these unknown variables by performing a hover check.

What is a hover check? Two variables in this critical maneuver are hover height and rpm. Assume that there is no wind and no variations in power available because of hot gas ingestion. Most NATOPS charts specify a skid or wheel height, but does it really make a difference once you are in IGE (in ground effect)?

We memorize for NATOPS quizzes that IGE is below approximately one rotor diameter and OGE (out of ground effect) is somewhere above that. Characteristic thrust data for helicopters (Figure 1) show no increase in thrust above one rotor diameter. As we descend below this alti-

Helo Graphics
By Don Jacobs, Naval Postgraduate School

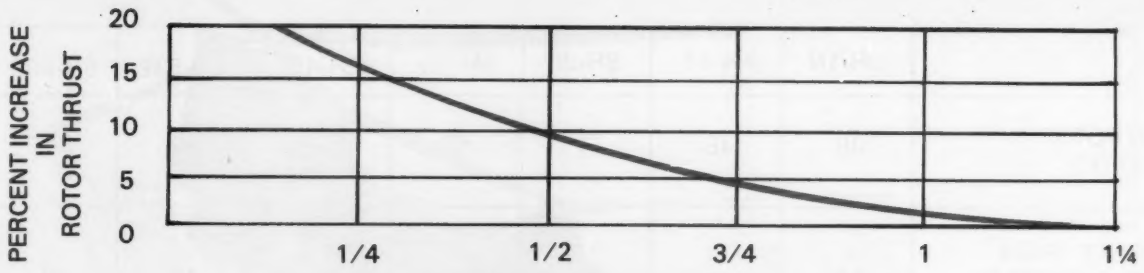

FIGURE 1. - ROTOR THRUST INCREASE VS. ROTOR HEIGHT ABOVE GROUND (CURVE SHIFTS SLIGHTLY LEFT FOR TANDEM ROTORS).

tude, however, there is an increase in hover thrust-produced IGE of up to 20 percent in the limit. The curve shifts with the number and size of blades, gross weight and altitude. This is the layman's "ground cushion."

The AOA (angle of attack) — the angle between the relative wind and the chordline of the main rotor — is determined by the vector sum of the rotational velocity and the induced velocity from the pumping action of the main rotor. Thrust increases as AOA increases, until stall.

For an OGE hover condition and a fixed collective position-pitch setting (angle between the chordline and a horizontal), the AOA is essentially constant; therefore, the thrust produced is also constant. However, as we get near the surface, there is a reflected component of this induced velocity that effectively decreases its magnitude relative to the blade, thereby increasing the local AOA and the thrust without any change in collective pitch setting (Figure 2).

It is now obvious that as we get closer to a surface, the AOA increase leads to more thrust for the same collective pitch setting. To take maximum advantage of this ground effect phenomenon, we would mount the main rotor blade under the helo; however, this would add a whole new dimension to load and unload passengers while turning, and the

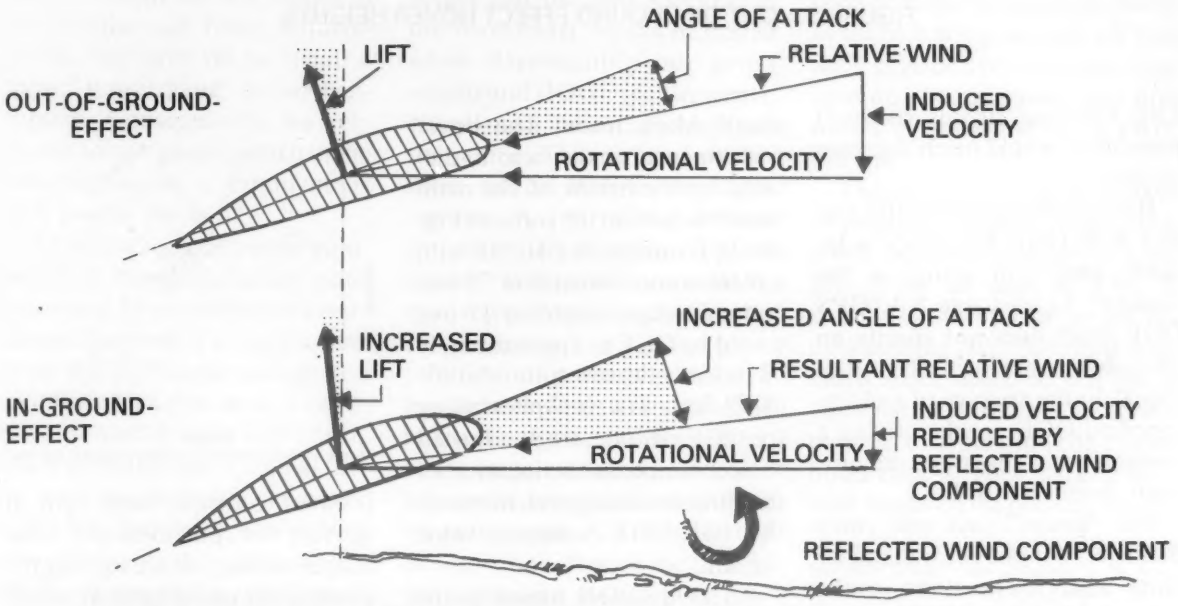

FIGURE 2. - ROTOR BLADE CROSS-SECTION (CONSTANT PITCH/COLLECTIVE SETTING)

	UH-1N	AH-1T	SH-2F	SH-3G	CH-46E	CH-53E	SH-60B
MAIN ROTOR DIAMETER	48	48	44	62	51	79	54
DISTANCE FROM WHEELS/SKIDS TO MAIN ROTOR	13	14	14	14	12-17	17	10
★OUT OF GROUND EFFECT ALTITUDE AS READ IN COCKPIT	35	34	30	48	39-34	62	44

★ADD DISTANCE FROM WHEELS/SKIDS TO ALTITUDE SENSING PORT

(ASSUME OUT OF GROUND EFFECT ABOVE 1 ROTOR DIAMETER)
(ALL HEIGHTS TO THE NEAREST FOOT AND APPROXIMATED)

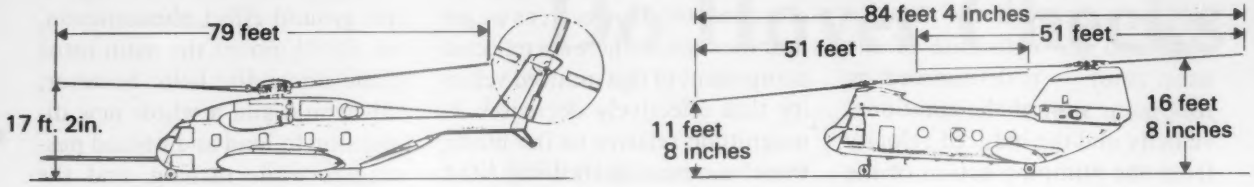

FIGURE 3. - OUT OF GROUND EFFECT HOVER HEIGHTS

LSE (landing signals enlisted) population would surely decrease rapidly.

How do I know where this elusive IGE/OGE boundary is located when I'm sitting in the cockpit? At least one NATOPS OGE chart does not specify an altitude to perform the OGE check. In the absence of a chart-specified OGE or when flying a mission traversing these regions, what should we use?

The "gouge" says one rotor diameter, but one rotor diameter from where? The skids or the wheels? Pilot's backside? Powerplant? Main rotor? The hover performance of the helo is dictated by the height of the main rotor blade from the surface (Figure 3). Example: A CH-53E with a main rotor diameter of 79 feet and a fuselage height of 17 feet would be OGE at approximately 62 feet vice the one rotor altitude of 79 feet. The cockpit reading for OGE altitude, when adjusted to accommodate the location of the altitude sensing port, increases this IGE/OGE boundary value slightly.

An unfavorable aspect is the "equation," which is when power

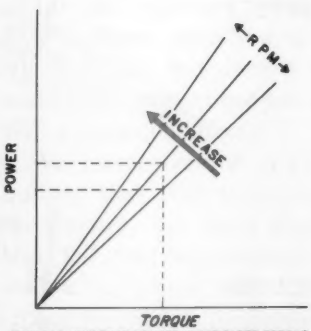

FIGURE 4. - POWER PRODUCED VS INDICATED TORQUE AND RPM

is equal to torque times rpm. If we vary the rpm, even at a fixed torque setting, we are varying the power produced (Figure 4), which in a stable hover is equal to the

power required.

Helicopters fly based on power requirements, not necessarily with torque, except when it comes to anti-torque/tail rotor requirements. We have yet to install a "pure" power gauge in our helicopters. Consequently, we rely on our torque gauge, which in the helo vernacular is synonymous with power. But is it?

An aircraft gross weight computation, based on torque reading, could be erroneous in determining the power if not performed at the NATOPS chart designated rpm for which that data is valid. If we are already in an IGE hover, this is probably not a critical factor since we obviously can hover IGE. The dominoes start falling when we arrive at an OGE hover, which we assumed we could handle, based on what we saw in an improperly performed hover chart.

By not using the skid or wheel height and the rpm specified in the hover chart, we can be misled when determining our gross weight and HOGE requirements, based on an indicated torque setting alone. This error could become critical later in our flight mission. A 1987 Class B MIR (mishap investigation report) stated, "Hover checks should be used to verify weight and balance computations."

When our properly performed hover check yields a hover torque in excess of what we computed, based on our assumed load, our helo probably weighs more than we anticipated. It is trying to tell us something. Now is the time to recompute our HOGE power requirements. We should compare them with our power available before we get into a potential "settling with power" situation (power required exceeds power available), when we slide off that deck edge or arrive at that steep confined landing zone and find ourselves instantly in an OGE hover.

The extra five seconds it takes to perform a proper hover check could add five decades to your life. If the air boss or FAC is screaming for you to get off his deck landing zone, just think how much more upset he will get if you splatter your airframe across the area. Real men don't do proper hover checks. They just end with their names on the message board.

Capt. Joslin, a Marine helicopter pilot, is the helicopter aerodynamics instructor at the Aviation Safety School, Navy Postgraduate School, Monterey, Calif. He has a master of science degree in aeronautical engineering.

Sunday Barnstorming

By Lt. Scott Bernard

RARELY is an entire aircraft community gathered together, feeling shame and frustration because of the actions of a few.

More than 100 T-34B pilots met at NAS Pensacola, Fla. For nine previous years, the annual two-day conference had focused on SOP matters, instrument ground school and a review of maintenance and operational problems.

This time it was different. Our community had experienced three gear-up landings and a dual fatality. Each mishap was attributed to pilot error.

The T-34B has been flown for the past 10 years

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by officers in 41 Navy recruiting command districts located throughout the country. These aircraft were transferred from the training command with the introduction of the T-34C. Navy recruiting district (NRD) pilots come from every aviation community and use the T-34B to maintain proficiency and to help recruit future naval aviators.

This type of flying is often performed under conditions like those of independent duty. All of the maintenance (by civilian fixed-based operators) and associated administrative functions are coordinated by the pilots themselves. That is where some of the current safety problems seem to lie.

Even with the continued emphasis on NATOPS, OPNAVINST 3710.7 and SOP, many of the procedures that exist at the squadron are absent at the NRD. A safe and successful NRD totally depends on the maturity, dedication and skills of its two or three pilots.

For most of us, that was one of the big drawing cards for taking the billet. Unfortunately, some of us took these responsibilities as applying to "everyone else," and indeed it is "the rest of us" who are left to clean up their mess.

This "mess" included flying (and subsequently killing) relatives, consuming alcohol just before flying and low-level aerobatics outside of the performance envelope. If these shock you, you know how we felt at the conference. So what have we done about it?

Prior to the conference, a detailed review by Commander, Naval Recruiting, which included a Naval Safety Center survey at each aircraft site, was conducted to determine if NRD flight procedures by their nature would continue to lend themselves to Sunday barnstorming. We came close to losing the entire program. In the end it was determined that with some changes, mishap-free operations could be conducted.

Closer involvement of XOs and COs in each flight evolution was mandated, as were new flight scheduling and reporting formats. But the basic accountability for a flight remained with the pilot-in-command.

Finally, a discussion was held so that we could express our feelings about what had happened and review the new restrictions we have to live with. Needless to say, we were angry at those pilots who had messed up, but we realized that we had to correct the problem.

We are no better or worse than any other community. We know that mishaps occur from a "causative chain of events." We have identified weak links in our operating procedures, and we have corrected them.

But there is one thing we cannot correct through review — individual attitude. There is no place in naval aviation for those who purposely seek to operate outside of those guidelines that have been so painfully developed over the years.

Every aviator has daydreamed about a private air show for his friends and his family. For 99 percent of us, it stops with that. The few who insist on carrying through cause anger, embarrassment, frustration and sadness to the rest of us. More seriously though, it will attack the heart of our profession: our ability to act and operate independently.

We must review our own approach to flying and bury once and for all the idea that we can still do a little barnstorming on the side. There are too many people in high places who would like to cut our budgets, or dictate our every move. Don't give them any more ammunition. We hope that perhaps our experience helps you to see a deficiency in your own program, or verify that you're doing things correctly. This is one lesson that we're beating to death . . . literally. ◄

Lt. Bernard is assigned to the Naval Recruiting District, San Diego, Calif., where he flies the T-34B.

Left to right:
Capt. Doug Moser, USMC,
IstLt. Ray Allen, USMC,
Maj. Ed Carr, USMC,
Lt. Randy West

Maj. Ed Carr, USMC
Capt. Doug Moser, USMC
1stLt. Ray Allen, USMC
Lt. Randy West, USN(MC)
VMFP-3

Maj. Carr and Lt. West, the squadron flight surgeon, were in the lead RF-4B on a three-plane flight from Kadena AFB, Okinawa, to NAS Cubi Point, R.P. At 29,000 feet, and 250 nm from Cubi, the aircraft's left generator and simultaneous bus tie failed. Maj. Carr and Lt. West reviewed their pocket checklists but could not restore normal electrical power.

Cockpit heat, vent and defog blower systems were inoperative and could not be restored, presenting a considerable problem because of the high humidity at Cubi. Fuel status would not permit an early descent to allow the cockpit to gradually warm up. Maj. Carr decided to pass the lead to Dash 2 and proceed to Cubi for a visual straight-in approach. Capt. Moser and 1stLt. Allen assumed the lead and detached Dash 3 to land first.

Passing through 6,000 feet, condensation fog began to develop, as expected. Unfortunately, the fuel status would not permit an extended levelling off. As the fog intensified, it became apparent that Maj. Carr would not be able to visually acquire the runway. After quickly assessing the situation, Capt. Moser and 1stLt. Allen coordinated a change in the

active runway to avoid having to execute a steep approach angle over mountainous terrain. They also requested an E-28 arrestment since Maj. Carr could not see beyond the canopy bow. Forward visibility in the front cockpit was limited to 3 inches with none of the cockpit instruments visible. The only remaining option, should Maj. Carr's vision become completely obscured, or in the event of a missed approach, was to jettison the rear canopy. The crew was not ready to do that, yet.

During the final stages of the section approach, the condensation was so thick that Maj. Carr's visual cues were limited to the starboard-wing position light and faint shadow of the lead aircraft. Maj. Carr jammed his head against the side of his canopy to maintain sight of the lead while Lt. West read off altitude and airspeed.

Passing through 1,500 feet, Lt. West could no longer read his instruments, and 1stLt. Allen relayed continuous information to Maj. Carr. The landing gear and flaps were lowered on radio command from Capt. Moser in the lead, as he flew the approach for both Phantoms, landing Maj. Carr and Lt. West on centerline. Maj. Carr rolled into the E-28 gear without incident.

Ens. Craig R. Dugan
VT-26

Ens. Dugan, a student naval aviator (SNA), was making his second arrested landing during initial carrier qualifications aboard USS *Lexington* (AVT-16). As he touched down, following an OK pass, his T-2C's nose strut failed at the base of the oleo, causing the entire assembly to separate from the strut, and the nose to fall through. The sudden movement of the nose caused the hook to rise above the wires. The aircraft continued down the deck and off the angle.

Ens. Dugan rotated the nose, keeping the trainer airborne. He was diverted to NAS Chase Field and made a no-nosegear landing, keeping the T-2 on runway centerline without damage to the airframe or engines.

Left to right: Cpl. David D. Bill, Cpl. Michael Toetz, Capt. Wiliam W. Taylor, Capt. John H. Price

Capt. William W. Taylor, USMC
Capt. John H. Price, USMC
Cpl. Michael Toetz, USMC
Cpl. David D. Bill, USMC
HML-267

Stinger 19 flew a cargo mission from USS *Dubuque* (LPD-8) and arrived at its destination without incident. Capt. Taylor (PIC) and Capt. Price (copilot) completed a normal shutdown and postflight while waiting for 2,000 pounds of cargo to be loaded aboard their CH-46. Cpl. Toetz (crew chief) and Cpl. Bill (1st mechanic) monitored the loading procedures. The Sea Knight then took off.

At approximately 100 feet and 55 knots, the No.1 engine torque dropped to 40 percent with the No. 2 engine torque increasing an equal amount. Capt. Price cross-checked the NG and T5 gauges and realized the No. 1 engine had "gone lazy."

The pilots decided to secure the power management system (PMS) to restore normal engine power. When the PMS was deselected, the No. 2 engine programmed properly, but the No. 1 engine began making a loud "popping" noise.

Both pilots realized a compressor stall had occurred. Capt. Taylor simultaneously reversed course back to the airport while initiating single-engine procedures. Capt. Price quickly cross-checked engine instruments, and with Capt. Taylor's agreement, he secured the No. 1 engine as its T5 passed 900 degrees C. The No. 1 engine programmed properly to stop and T5 remained below 300 degrees C.

Cpl. Toetz and Cpl. Bill confirmed there was no engine fire. Capt. Taylor initiated a running landing profile while Capt. Price completed the landing checklist. The crew completed a single-engine landing and subsequent shutdown without further incident.

Postflight inspection revealed that the No. 1 engine was FODed.

1stLt. Richard K. Bland, USMC
VMFA-115

While engaged with another aircraft in a 2 v 2 fighter-weapons-syllabus flight, 1stLt. Bland felt a thump in the left side of his F/A-18. Looking back, he saw a fire ball exit his left tailpipe. Another pilot in the flight confirmed the fire ball.

1stLt. Bland immediately identified the problem as a left engine stall, based on his engine instruments and the fire ball.

Within two and one-half seconds, he had completed immediate action procedures and secured the left engine. With the engine secured and no indication of fire outside the engine, the EGT continued to rise for approximately seven seconds, then finally cooled. 1stLt. Bland made an uneventful single-engine landing.

Postflight inspection revealed that the high-pressure-compressor section had failed, causing major internal damage to the engine. Had 1stLt. Bland hesitated before complying with his immediate action procedures, major damage to the aircraft structure would have occurred, and the outcome of this emergency could have been entirely different. His quick response prevented damage to the engine bay and saved the aircraft. ◄

. . . When the yellowshirt saw what was happening, he backed away and turned his head. A large piece of the exploding tire hit him on he side of his goggles . . .

Yellowshirt on the Deck!

By Lt. John Judy

THE EA-6B's line-up looked good as it approached the carrier. As it touched down on the deck, I said, "Yeah, buddy, we cheated death again."

With power back and flaps up, the Prowler was waved to the bow when the director stopped it on the track.

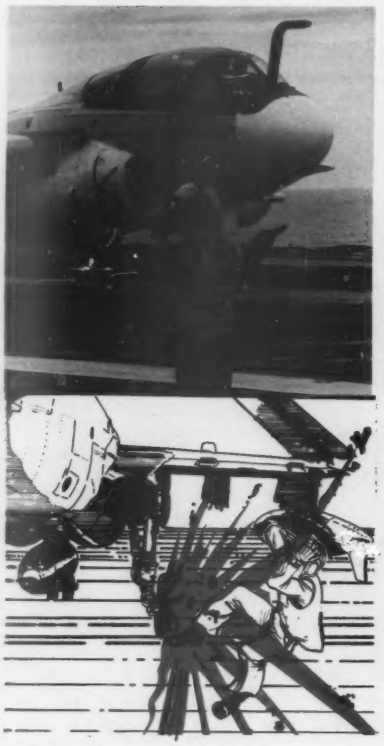
"OK, up on the power," I told myself. "Not too much because our nose is over the scupper. This jet just doesn't want to move. I'll give it a little more power. It feels like we're starting to slide left."

Bam!

"What was that?" I yelled. We were sitting right wing down. I wondered what happened to the yellowshirt. Then I saw him on the deck holding his eye.

This mishap happened on what was supposed to be another routine day of flight ops. It was, except for when we taxied and a yellowshirt suffered a disabling eye injury.

Here's what happened. As we turned aft on the starboard bow, the right mainmount was still inboard of the Van-Zelm track. When I advanced power to cross over, the starboard tire settled in the cat track and slid into the shuttle, causing the tire to explode.



The yellowshirt safety observer had positioned himself near the tire to provide clearance guidance to the plane director. When the tire began to slide, no one could keep it from sliding into the shuttle. When the yellowshirt saw what was happening, he backed away and turned his head. A large piece of the exploding tire struck him on the side of his goggles. He hit the deck, clutching his face as if he were struck with a baseball bat. Even with a cranial helmet and goggles, he suffered massive facial injuries and nearly lost an eye. Without his goggles down, he could have been killed.

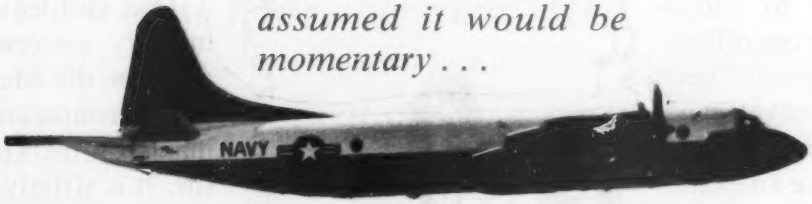
The yellowshirt was following correct flight procedures. He was in the proper uniform and had positioned himself close to the aircraft tire because he was monitoring our plane's clearance. When the tire began to slide, nothing could be done to prevent the mishap. Although adequately trained, he became a victim of being in the wrong place at the wrong time.

The flight deck is one of the most dangerous places to work on the face of this planet. On the CV's roof there are no routine days, no standard launches and no normal taxi evolutions. The potential for disaster on the flight deck can only be averted by uncompromising adherence to all safety regulations. ◄

Flight deck safety rules can be found in "A Basic Guide — Flight Deck Awareness," published by the Naval Safety Center, Norfolk, Va. More detailed information can be found in CV NATOPS. — ABCM William D. Griffin, Air Operations Analyst, Naval Safety Center.

Lt. Judy is with VAQ-132, an EA-6B squadron based at NAS Whidbey Island, Wash.

. . . When pressure started fluctuating and decreasing at flight level 240, both crew and passengers assumed it would be momentary . . .



"Holy Hypoxia!"

By Cdr. Mark Denari

DURING the first three hours of a cross-country flight, a P-3 crew had trouble trying to control and stabilize the cabin pressure. When pressure started fluctuating and decreasing at flight level 240, both the crew and their passengers assumed it would be momentary. An announcement over the PA system stated, "The smoking lamp is out. The cockpit crew is going on oxygen." Few passengers realized the significance of the announcement.

Shortly afterward, crew members and passengers who were awake began to feel varying degrees of dizziness, rapid heartbeat, weakness and mental impairment. Some realized what was happening and were able to get on oxygen and to assist others needing help. Those asleep were awakened.

One person was so hypoxic he was completely unable to help himself. Those seated aft who were not alerted for a longer period (total time estimated from five to 15 minutes) were more hypoxic when help finally arrived.

"Holy hypoxia" is a term sometimes used by aeromedical experts studying how best to solve this problem. They indicate that some crews

. . . One person was so hypoxic he was completely unable to help himself . . .

just haven't gotten their act together. The P-3 incident could have resulted in something more than a physiological episode report. Proper procedures were not followed. The CO's comments were, "Misplaced priorities led the crew to trouble-shoot a serious problem at altitude and to wait for ATC clearance rather than immediately executing an emergency descent."

The pilots' failure to announce over the PA system the loss of pressurization control and to order use of oxygen resulted in confusion. It became a fragmented effort by individuals to handle the emergency instead of a coordinated effort by the crew.

In the multiengine community, a question cropping up now and then on aircraft commander boards and NATOPS review sessions concerns "flight with one engine-driven compressor (EDC) operating." More often than not, the standard answer is, "With loss of the only operating EDC, you must make sure that you have enough fuel to fly at 10,000 feet."

More intense discussion should be channeled toward the handling of the pressurization and oxygen problems resulting from the loss of the aircraft's only operating EDC.

Analyzing hypoxic episodes gives us professional insight into handling emergencies through forthright discussions of events, consequences and lessons learned. OPNAVINST 3710.7M, Para 814 (Oxygen), Item 6, states: "When an occupant of any aircraft is observed or suspected to be suffering from the effects of decompression sickness, 100 percent oxygen will be started, the pilot shall immediately descend and land at the nearest civilian or military installation suitable for safe landing and obtain qualified medical assistance."

Immediate, positive notification of all aircraft occupants in the event pressurization loss is vital. Finally, pre-takeoff plane-side briefs should be thorough enough to cover procedures and responsibilities of crew members during emergencies. ◄

Cdr. Denari is operations officer of VP-91 at NAS Moffett Field, Calif. A reservist P-3 pilot, he is an architect and commercial artist in civilian life.

Beer Bets

By Cdr. E.J. Sullivan

YOU'RE sitting at a bar while on deployment and see the opportunity to win a beer or two off the ops officer. He's always ready for a "beer bet." Here are three you can't lose. First, ask him to define MARSA and give an example involving an IR route. Next, ask him to define Due Regard as it applies to ASW or carrier ops. Third, bet him that since there are 20 people sitting around the bar, two of them will have the same birthday. The odds on number 3 are better than 50-50; the odds he'll be wrong on either 1 or 2 are much better than that.

MARSA and Operational- Due Regard are two phrases used routinely by naval aviators, but completely understood by fewer than 10 percent. What do they really mean? What do they guarantee to the flight crew? What do they signify to the ATC controlling agency?

MARSA. Military Assumes Responsibility for Separation of Aircraft. Does this mean that you or somebody at the wing is going to keep all other aircraft out of your way, or that the Navy assumes all responsibility and liability if aircraft do not remain separated? Let's use the IR Route scenario to explain.

An A-6 crew from NAS Oceana is filed for IR-720, and MARSA appears in the remarks section of the DD-175. MARSA means that MATWING/FACSFAC VACAPES has ensured that no other military aircraft is scheduled to enter that route for a specific period of time in order to maintain separation of participating military aircraft. The appropriate FAA ATC facility (Washington Center in this case) will keep other IFR aircraft clear of IR-720 while it is in use.

That still leaves all other military aircrews booming along on the intersecting VR and IR routes and all the civilian VFR fliers unaccounted for. It is strictly the responsibility of the flight crew to "see and avoid" all those other aircraft. The same criteria hold in the warning areas and MOAs. The appropriate military facility, through scheduling, radar or other means, will ensure that "participating military aircraft" only maintain separation. All those other guys are your responsibility. Yes, that Cessna flying VFR out there in the warning area is legal, and both of you are required to "see and avoid."

Due Regard or Operational. No, you cannot go Due Regard from Tinker to Miramar via the Grand Canyon. The term stems from Article III of the 1944 Chicago Convention of ICAO and is explained in OPNAVINST 377.4A. Due Regard is an ICAO procedure that allows an aircraft commander, with the proper authorization of the operational commander, to conduct military flight operations over the high seas under one or more of the following conditions:

- *Aircraft shall be operated VMC.*
- *Aircraft shall be operated within radar surveillance and radio communication of a surface radar facility (E-2s qualify also).*
- *Aircraft shall be equipped with airborne radar that is sufficient to provide separation between themselves, aircraft they are controlling and other aircraft.*
- *Aircraft shall be operated outside controlled air space.*

This means the P-3 crew tracking Ivan while flying in Shanwick Oceanic Airspace or the A-6 crew that has just been handed off to the small boy with only a surface search radar must remain VMC. Due Regard is to be used only when the operational situation dictates that following ICAO procedures would be impossible or counterproductive; at all other times, Navy aircrews are to follow ICAO procedures.

Learn the rules and stick to them. Airspace is a terrible thing to lose. By the way, I have never lost the bet about people with the same birthday. I've won with as few as 12 people, but it never took more than 21. ◄

Cdr. Sullivan is the Navy representative for the Federal Aviation Administration's New England/Eastern Regions in Burlington, Mass.

One bet you will never have to worry about losing is when you dial

1-800-HOT SFTY

looking for the correct answer to your safety question.
This is the Safety Center's hot line, and we have enough correct answers to make everyone a winner.
Try us; we're here to help.

LETTERS

PH2 L.B. Foster

Re: Just Another Walk in the Park (Dec '88)

San Diego, Calif. — A photograph used with Lt. Jeff Bright's article shows an LSE directing flight operations on the flight deck of USS Ship. Certain items of flight clothing should be worn by such persons during these operations in the interest of safety. The second-class petty officer in this picture has several of these items missing: no long sleeves, no gloves and pant legs blowing gently in the breeze.

I realize that the article is not about LSEs and what they should wear on the flight deck, but there he is, caught with his pants out. Approach is a great source of valuable information, and the article was no exception. But this photo proves you can run but you can't hide from avid Approach readers.

AD3 Alan R. Blake
HC-9
NAS North Island

Don't Knock It If You Haven't Tried It

MCAS Kaneohe Bay, Hawaii — I was recently reading a local paper when I came across an article about how dangerous it is to fly at night wearing night vision goggles (NVGs). It occurred to me that the person who wrote the article never had the opportunity to fly at night with NVGs.

Night flying is a demanding part of helo operations, and any advantage is more than welcome. Our survival is based on our ability to get in and out of a landing zone undetected. Our only opportunity to do this is usually at night. Being able to see at night using NVGs is vital to the success of the mission.

Most of the criticism about NVGs concerns the fact that these devices limit your peripheral vision and depth perception. However, having an opportunity to use some of my peripheral vision on a dark night instead of having no peripheral vision at all is an advantage. Having some depth perception instead of no depth perception at all is also an advantage. We can be trained to use these advantages more effectively.

Perhaps the only disadvantage is the overconfidence you may get when using NVGs. They make you feel you can do whatever is tasked. You can, but only if you use the NVGs properly. The better we are educated and the more we train, the better we will be able to control this disadvantage. As far as NVGs go, don't knock them, if you haven't tried them.

IstLt. J.R. Tipler, USMC
HMM-265/MAG-24/ 1st MEB FMF

• NVGs have enhanced our ability to operate at night and have improved our capability to fly critical missions. As the author implies, they have some critical shortfalls, which, if not recognized and compensated for, can lead one down the rosy path to a smoking hole. There are significant mishaps on record in which NVGs were used during the mission. The crews apparently did not recognize the limitations of the NVGs, or perhaps they were complacent in their use. MAWTS-1, MCAS Yuma, Ariz., has an excellent NVG training program that emphasizes the strengths and the weaknesses in the use of NVGs. A squadron training program is essential to bring crews up to speed. Ensuring currency is another hurdle. Safe NVG operations offer expanded mission capabilities, but require knowledge, proficiency and currency in NVG use. — Capt. Kenneth G. Craig, Director, Aviation Safety Programs, Naval Safety Center, Norfolk, Va.

Approach welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: Approach Editor, Naval Safety Center, NAS Norfolk, VA 23511-5796. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

Fashion in Flight Gear

NAS Miramar, Calif. — In naval aviation today, the flight suit is a trend-setting fashion craze. Some of our aviators are letting fashion slip into their flight clothing. They're wearing polyester "I've Been There" T-shirts or button-up polo shirts.

These shirts look great when at the club singing, "You've Lost that Loving Feeling," but in the cockpit during a fire it could be disastrous. For NATOPS-approved fashions try OPNAVINST 3710.7M, Chapter 8, Section 8II, item d. It states:

"d. Fire resistant flight suit (aramid): Aramid or cotton type undergarments shall be worn. Suitable fire resistant unit issue clothing (aramid) may be substituted for the flight suit for flight personnel in fixed-wing cargo/transport aircraft." Accept this fashion suggestion and you will enjoy many more days behind the stick.

PR2 D.K. McClure
VAW-117

A very good point is made by PR2 McClure. Flight crews, are you wearing a polyester mix that burns or melts easily rather than cotton? If you need further information about flight clothing, refer to NAVAIR 13-1-6.7, Aircrew Personal Protective Equipment, Chapter 3. It will show you the latest in fashion for the up-to-date aircrew. Never let fashion take the place of your safety. — PRCS Larry G. Fair, Life Support Equipment Branch, Aircraft Maintenance and Material Division, Naval Safety Center, Norfolk, Va.

You've Got It!

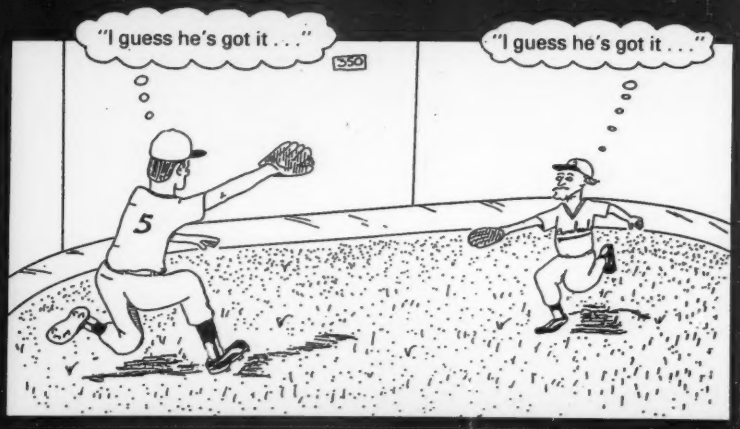
NAS Miramar, Calif. — On a pinky cat shot, the pilot of the E-2C let out a yelp as the aircraft left the end of the angle. He quickly transferred control to the copilot on the climbout. Somewhat startled, the copilot assumed control and continued the climb.

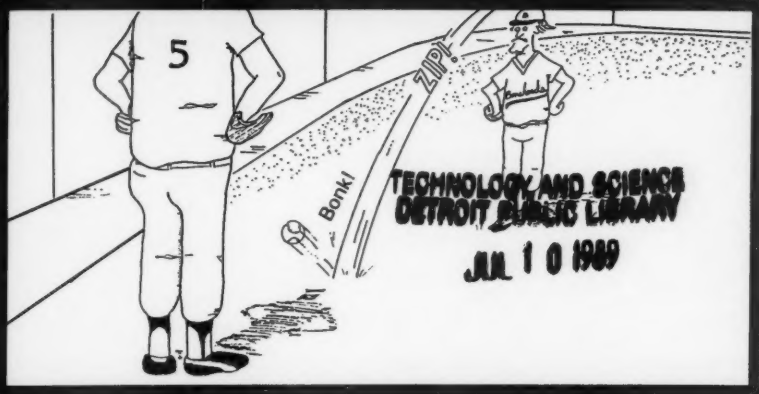
The pilot, who was not wearing gloves, had received an electrical shock when his trim button came off the control yoke and he initiated nose-down trim off the deck. Had the copilot not been alert, the control transfer would not have taken place so smoothly.

Sometimes in multipiloted aircraft, the copilot isn't mentally prepared to assume control on an instant's notice. If the pilot experiences vertigo or if there is a major instrument malfunction, the aircraft might be in extremis when the copilot takes over. If you're not controlling the aircraft, be ready to assume control instantly.

Lt. R.T. Broadaway
Safety Officer
VAW-117

BROWNSHOES IN ACTION COMIX





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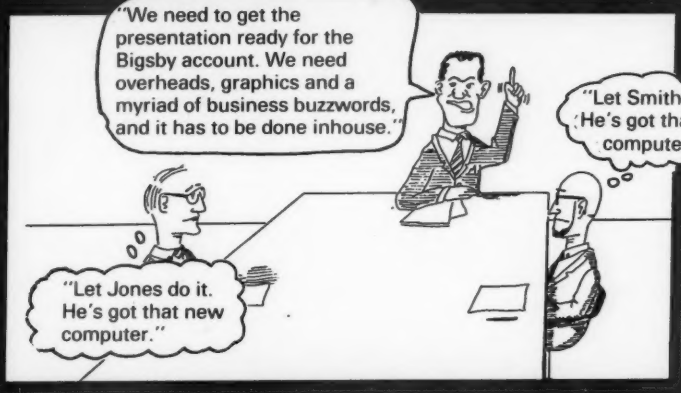
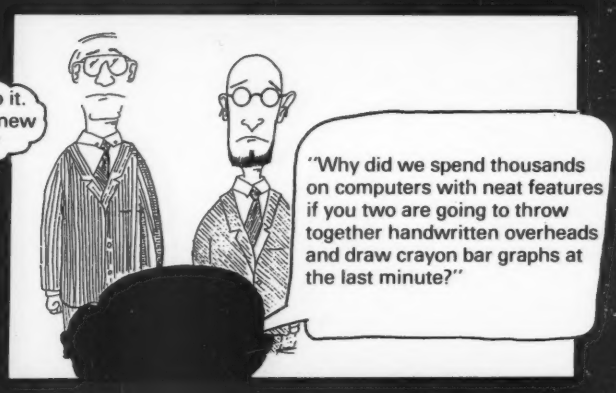
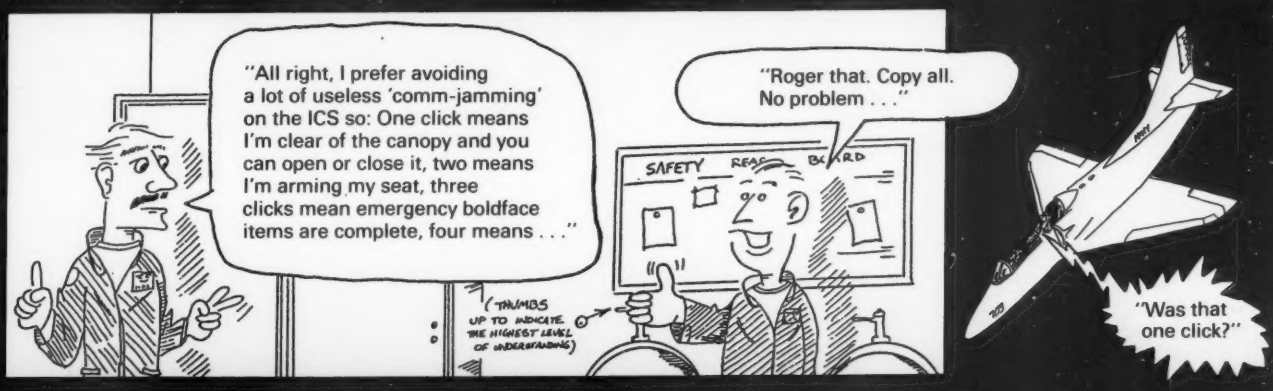

"We need to get the presentation ready for the Bigsby account. We need overheads, graphics and a myriad of business buzzwords, and it has to be done inhouse."
"Let Smith do it. He's got that new computer."
"Let Jones do it. He's got that new computer."


"Why did we spend thousands on computers with neat features if you two are going to throw together handwritten overheads and draw crayon bar graphs at the last minute?"


"All right, I prefer avoiding a lot of useless 'comm-jamming' on the ICS so: One click means I'm clear of the canopy and you can open or close it, two means I'm arming my seat, three clicks mean emergency boldface items are complete, four means . . ."
"Roger that. Copy all. No problem . . ."
SAFETY
(THUMBS UP TO INDICATE THE HIGHEST LEVEL OF UNDERSTANDING)
"Was that one click?"

Miscommunication can be embarrassing in any profession. In aviation it can be more so.

An ounce of preflight is worth a pound of

TFOA*

*Things Falling Off Aircraft